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10/778,008	02/12/2004	Zakar Raffi Hachikian	ITW 0009 PA/41038.13/1455	3347
51635 7590 11/01/2007 DINSMORE & SHOHL LLP ONE DAYTON CENTRE, ONE SOUTH MAIN STREET SUITE 1300 DAYTON, OH 45402-2023				
			EXAMINER FEELY, MICHAEL J	
			ART UNIT 1796	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/778,008

Applicant(s)

HACHIKIAN, ZAKAR RAFFI

Examiner

Michael J. Feely

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-56 and 58-61 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-56 and 58-61 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 20040510, 20050516, 20070904.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Pending Claims*

Claims 1-56 and 58-61 are pending.

### *Election/Restrictions*

1. Applicant's election with traverse of *species b* in the reply filed on August 27, 2007 is acknowledged. After further consideration, the election requirement has been withdrawn.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 14, 30, and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 14, 30, and 35 disclose *an unmodified amide/imidazoline*. The meaning of the forward slash in this term is unclear: amide or imidazoline; amide and imidazoline; adduct of amide and imidazoline.

### *Claim interpretation*

4. In the pending claims, the recitation "*infiltrant*," has been given little patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded patentable weight where it merely recites the purpose of a process or the intended use of a structure, and

Art Unit: 1796

where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

In the instant case, the preamble merely recites the intended use of the composition, wherein the prior art can meet this future limitation by merely being capable of such intended use.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-10, 13-18, 21-23, 26-32, 36, 37, 40-42, 45-49, 52, 55, and 58-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Walker (US Pat. No. 5,688,905).

Regarding claims 1-5, 7-10, 13-18, 21-23, 27-32, 36, 37, 40-42, 46-49, 52, 55, and 58-61

Walker discloses: (I) an infiltrant system comprising (Abstract):

a resin component comprising: an epoxy resin (column 5, line 60 through column 7, line 12); and a diluent (column 7, lines 13-48); and

a hardener component comprising: an amine selected from unmodified aliphatic amines, modified aliphatic amines, unmodified cycloaliphatic amines, modified cycloaliphatic amines, unmodified amidoamines, modified amidoamines, or combinations thereof (column 5, lines 1-

Art Unit: 1796

22); an amide selected from modified amidoamines, unmodified amidoamines, or combinations thereof (column 4, lines 33-67); and optionally a catalyst (column 8, lines 14-20);

(17) an infiltrant system comprising (Abstract):

a resin component comprising: about 50 to about 90 % by weight of resin component of an epoxy resin (column 5, line 60 through column 7, line 12); and about 10 to about 50 % by weight of resin component of a diluent (column 7, lines 13-48); and

a hardener component comprising: about 20 to about 80 % by weight of hardener component of an amine selected from unmodified aliphatic amines, modified aliphatic amines, unmodified cycloaliphatic amines, modified cycloaliphatic amines, unmodified amidoamines, modified amidoamines, or combinations thereof (column 5, lines 1-22); about 20 to about 70 % by weight of hardener component of an amide selected from unmodified amidoamines, modified amidoamines, or combinations thereof (column 4, lines 33-67); and 0 to about 10 % by weight of hardener component of a catalyst (column 8, lines 14-20);

(36) an infiltrant system comprising (Abstract):

a resin component comprising: about 50 to about 90 % by weight of resin component of an epoxy resin (column 5, line 60 through column 7, line 12); and about 10 to about 50 % by weight of resin component of a diluent (column 7, lines 13-48); and

a hardener component comprising: about 30 to about 90 % by weight of hardener component of an amine selected from unmodified aliphatic amines, modified aliphatic amines, unmodified cycloaliphatic amines, modified cycloaliphatic amines, unmodified amidoamines, modified amidoamines, or combinations thereof (column 5, lines 1-22); and about 10 to about 40

Art Unit: 1796

% by weight of hardener component of an amide selected from polyamides and mixtures thereof (column 4, lines 33-67);

**(58)** an infiltrant system comprising (Abstract):

a resin component comprising: an epoxy resin (column 5, line 60 through column 7, line 12); and a diluent (column 7, lines 13-48); and

a hardener component comprising: an amine selected from unmodified aliphatic amines, modified aliphatic amines, unmodified cycloaliphatic amines, modified cycloaliphatic amines, unmodified amidoamines, modified amidoamines, or combinations thereof (column 5, lines 1-22); and optionally an amide selected from polyamides and mixtures thereof (column 4, lines 33-67);

**(2, 18, 37, 59)** wherein the epoxy resin is selected from bisphenol A, bisphenol F, or combinations thereof (column 7, lines 8-12);

**(3, 21, 40, 60)** wherein the diluent is selected from reactive diluents, nonreactive diluents, or combinations thereof (column 7, lines 13-26); **(4, 22, 41)** wherein the diluent is a reactive diluent selected from difunctional reactive diluents, monofunctional reactive diluents, or combinations thereof (column 7, lines 13-26); **(5, 23, 42)** wherein the reactive diluent is selected from diglycidyl ether, glycidyl ether, or combinations thereof (column 7, lines 13-26);

**(7, 27, 61)** wherein the amine is an unmodified aliphatic amine (column 5, lines 1-22); **(8, 28)** wherein the unmodified aliphatic amine is aminoethyl-piperazine (column 5, lines 1-22); **(9)** wherein the amine is a polyamine (column 5, lines 1-22); **(10, 49)** wherein the polyamine is a polyoxypropyleneamine base polyamine (column 5, lines 1-22); **(29)** wherein the amine is present in an amount of about 30 to about 60 % by weight of hardener component (column 5,

Art Unit: 1796

lines 1-22); **(46, 55)** wherein the amine is a mixture of a polyamine unmodified aliphatic amine and a second unmodified aliphatic amine (Abstract; column 4, lines 7-32; column 5, lines 1-22); **(47)** wherein the amine is a mixture of about 20 to about 80 % by weight of hardener component of the polyamine and about 10 to about 40 % by weight of hardener component of the second unmodified aliphatic amine (Abstract; column 4, lines 7-32; column 5, lines 1-22); **(48)** wherein the amine is a mixture of about 35 to about 60 % by weight of hardener component of the polyamine and about 20 to about 30 % by weight of hardener component of the second unmodified aliphatic amine (Abstract; column 4, lines 7-32; column 5, lines 1-22);

**(13)** wherein the amide is selected from modified amidoamines, or unmodified amidoamines (column 4, lines 33-67); **(14, 30)** wherein the amide is an unmodified amide/imidazoline (column 4, lines 33-67); **(15)** wherein the amide is a mixture of polyamides (column 4, lines 33-67); **(31)** wherein the amide is present in an amount of about 40 to about 60 % by weight of hardener component (column 4, lines 33-67); **(52)** wherein the amide is present in an amount of about 20 to about 35 % by weight of hardener component (column 4, lines 33-67); and

**(16, 32)** wherein the catalyst is selected from tertiary amines or benzyl alcohol (column 8, lines 14-20).

Regarding claims 6, 26, and 45, Walker does not explicitly disclose the limitations of these claims; however, the scope of claims 6, 26, and 45 is open to the entire Markush group set forth in claims 5, 23, and 42. Hence, Walker also anticipated these claims.

Art Unit: 1796

*Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walker (US Pat. No. 5,688,905).

Regarding claim 33, Walker discloses the use of a catalyst (*see column 8, lines 14-20*); however, he fails to disclose: (33) wherein the catalyst is present in an amount of about 3 to about 7 % by weight of hardener component.

One of ordinary skill in the art would have recognized the amount of catalyst as a result effective variable. A proper amount is required to speed up the rate of reaction, while too much is wasteful and may lead to an uncontrolled reaction rate and premature hardening. In light of this, it has been found that, “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation,” – *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); and “A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation,” – *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of catalyst, as instantly claimed, in the composition of Walker



Art Unit: 1796

because the skilled artisan would have recognized this quantity as a result effective variable. An optimum amount would have been required to sufficiently accelerate the curing reaction, while avoiding uncontrolled and premature hardening.

9. Claims 6, 19, 20, 24-26, 38, 39, and 43-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walker (US Pat. No. 5,688,905) in view of Alvino et al. (US Pat. No. 4,327,143).

Regarding claims 6, 26, and 45, Walker discloses the use of reactive diluents. This includes monofunctional epoxy diluents, such as glycidyl ether of butanol (*see column 7, lines 13-26*). However, he fails to explicitly disclose: **(6, 26, 45)** wherein the reactive diluent is a diglycidyl ether of neopentyl glycol.

Alvino et al. disclose a similar epoxy resin composition (*see Abstract; column 2, lines 26-60*). They also disclose the use of epoxy reactive diluents, including glycidyl ether of butanol and diglycidyl ethers of neopentyl glycol. This disclosure demonstrates that these epoxy reactive diluents are recognized in the art as equivalent reactive diluents. In light of this, it has been found that the substitution of equivalents known for the same purpose is *prima facie* obvious – *see MPEP 2144.06*. Furthermore, the combining of equivalents known for the same purpose is also *prima facie* obvious – *see MPEP 2144.06*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use diglycidyl ether of neopentyl glycol diglycidyl ether in the composition of Walker, because the teachings of Alvino et al. demonstrate that glycidyl ether of butanol and diglycidyl ether of neopentyl glycol are equivalent reactive diluents.

Art Unit: 1796

Regarding claims 24, 25, 43, and 44, the combined teachings of Walker and Alvino et al. are as set forth above and incorporated herein. Alvino also disclose the following appropriate amounts: **(24, 43)** about 5 to about 30 % by weight of resin component diglycidyl ether and about 5 to about 20 % by weight of resin component glycidyl ether (*see column 4, lines 51-65*); and **(25, 44)** about 10 to about 20 % by weight of resin component diglycidyl ether and about 5 to about 10 % by weight of resin component glycidyl ether (*see column 4, lines 51-56*).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed percentages, as taught by Alvino et al., in the composition of Walker because Alvino et al. disclose that these are useful amounts for this type of epoxy resin system.

Regarding claims 19, 20, 38, and 39, the combined teachings of Walker and Alvino et al. are as set forth above and incorporated herein. Alvino also disclose that the instantly claimed amounts set forth in claims **(19, 20, 38, and 39)** are useful amounts of epoxy resin/epoxy reactive diluent.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed percentages, as taught by Alvino et al., in the composition of Walker because Alvino et al. disclose that these are useful amounts for this type of epoxy resin system.

10. Claims 11, 12, 50, 51, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walker (US Pat. No. 5,688,905) in view of Chow et al. (US Pat. No. 4,507,363).

Regarding claims 11 and 50, Walker discloses numerous polyamines, including poly(alkylene oxide) polyamines (*see column 5, lines 1-22*). However, they fail to explicitly disclose: **(11, 50)** wherein the unmodified aliphatic amine is a diethylene glycol di(aminopropyl) ether base unmodified aliphatic amine.

Chow et al. disclose a similar epoxy resin system (*see Abstract; column 2, lines 3-34*). Furthermore, they disclose that di- $\gamma$ -aminopropyl ether of diethylene glycol and polypropylene glycol diamines are particularly useful polyamine hardeners (*see column 4, lines 51-68*). This disclosure establishes that the polyamines of Walker and the instantly claimed “diethylene glycol di(aminopropyl) ether base unmodified aliphatic amine” are recognized as equivalent hardeners. In light of this, it has been found that the substitution of equivalents known for the same purpose is *prima facie* obvious – *see MPEP 2144.06*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed “diethylene glycol di(aminopropyl) ether base unmodified aliphatic amine” in Walker because Chow et al. demonstrate that the polyamines of Walker and the instantly claimed “diethylene glycol di(aminopropyl) ether base unmodified aliphatic amine” are recognized as equivalent hardeners.

Regarding claims 12, 51, and 56, the combined teachings of Walker and Chow et al. are as set forth above and incorporated herein. They fail to explicitly disclose: **(12, 51)** wherein the amine is a mixture of a polyoxypropyleneamine base polyamine and a diethylene glycol di(aminopropyl) ether base unmodified aliphatic amine; and **(56)** wherein the hardener component is a combination of polyoxypropyleneamine polyamine and diethylene glycol di(aminopropyl) ether base unmodified aliphatic amine.

Art Unit: 1796

However, it has been found that the combining of equivalents known for the same purpose is *prima facie* obvious – see *MPEP 2144.06*.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed amine mixture in Walker because Chow et al. demonstrate that the polyamines of Walker and the instantly claimed “diethylene glycol di(aminopropyl) ether base unmodified aliphatic amine” are recognized as equivalent hardeners.

11. Claims 34, 35, 53, and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walker (US Pat. No. 5,688,905) in view of Alvino et al. (US Pat. No. 4,327,143) and Chow et al. (US Pat. No. 4,507,363).

Regarding claims 34, 35, 53, and 54, the combined teachings of Walker, Alvino et al. and Chow et al. are as set forth above and incorporated herein to satisfy the limitations of claims (34, 35, 53, 54).

Art Unit: 1796

*Communication*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Y. Pyon can be reached on 571-272-1498. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Michael J. Feely  
Primary Examiner  
Art Unit 1796

October 30, 2007

**MICHAEL FEELY  
PRIMARY EXAMINER**